

Ms. A. 226

STATE OF KELANTAN.

Annual Report of the Medical Department for the year 1936.

BY
DR. T. F. STRANG
Chief Medical Officer, Kelantan.

PRINTED BY THE CHEONG FATT PRESS,
KELANTAN.
1936.



22501401051

STATE OF KELANTAN.

Annual Report of the Medical Department for the year 1936.

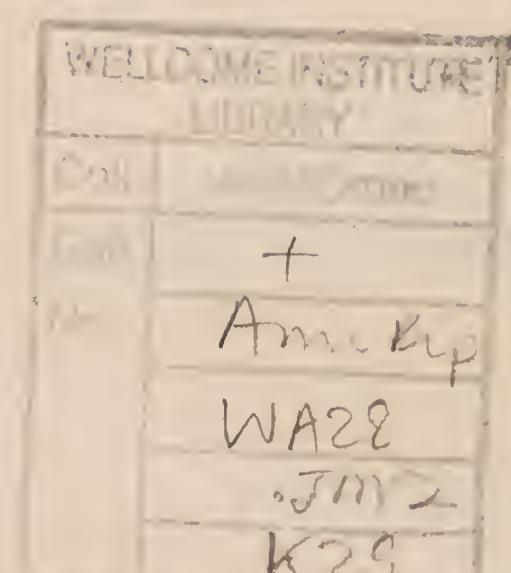
BY

DR. T. F. STRANG
Chief Medical Officer, Kelantan.

PRINTED BY THE CHEONG FATT PRESS,

KELANTAN.

1936.



1936

CONTENTS

		Page
INTRODUCTION .....	..	1
NEW BUILDINGS .....	..	1
LEGISLATION .....	..	1
NEW DEVELOPMENTS—		
Travelling Despensaries .....	..	1
Infant Welfare .....	..	1
Radiography .....	..	2
Training of "Bidans" .....	..	2
I.—ADMINISTRATION—		
(A).—Staff .....	..	2
(B).—Financial .....	..	2
II.—PUBLIC HEALTH—		
Population .....	..	3
Births .....	..	3
Deaths .....	..	4
Infantile Mortality .....	..	4
III.—HYGIENE AND SANITATION—		
(i) Malaria .....	..	4
(ii) Plague .....	..	5
(iii) Cholera .....	..	5
(iv) Small-pox .....	..	5
(v) Tropical Typhus .....	..	6
(vi) Enteric Fever .....	..	6
(vii) Dysentery and Diarrhoea .....	..	6
(viii) Cerebro-spinal Meningitis .....	..	6
(ix) Diphtheria .....	..	6
(x) Leprosy .....	..	6
(xi) Tuberculosis .....	..	7
(xii) Mumps .....	..	7
(xiii) Measles .....	..	7
(xiv) Chicken-pox .....	..	7
GENERAL MEASURES OF SANITATION:		
(i) Anti-malarial Measures .....	..	7
(ii) Sewage Disposal .....	..	8
(iii) Refuse Disposal .....	..	9
(iv) Water Supplies .....	..	9
(v) Offensive Trades .....	..	10
(vi) House Visiting .....	..	10
(vii) Estate Visiting .....	..	10
(viii) School Hygiene .....	..	10
(ix) Labour Conditions:—		
(A).—On Estates .....	..	11
(B).—On Mines .....	..	12
(C).—Government Labour .....	..	12
(x) Housing and Town Planning .....	..	12
(xi) Food in Relation To Health & Diseases .....	..	13
(xii) Measures Taken To Spread The Knowledge of Hygiene & Sanitation .....	..	13
(xiii) Training of Sanitary Personnel .....	..	13

	<i>Page</i>		
VI.—PORT HEALTH WORK AND ADMINISTRATION—	13		
V.—MATERNITY AND CHILD WELFARE—	14		
Training and Work of Midwives ..	14		
Infant Welfare Service ..	14		
VI.—HOSPITALS & DISPENSARIES—			
(1) Hospital in-patients	15		
Cost of Diets	16		
(2) Out-patients	16		
(3) Report on Pathological Work Done in Hospital Clinical Laboratories, Kelantan for 1935 and 1936.	18		
(4) Surgery	19		
(5) Radiology	19		
(6) Ophthalmology	19		
(7) Social Hygiene	19		
(8) Hospital for Women	19		
VII.—INSTITUTION FOR MENTAL DISEASES & FOR LEPROSY—			
(A).—Mental Hospital	19		
(B).—Leper Settlements	21		
VIII.—PRISON HOSPITAL WARDS	21		
<hr/>			
APPENDIX I.—STAFF	23		
,, II.—EXPENDITURE	26		
,, III.—REVENUE	27		
,, IV.—RETURN OF DISEASES AND DEATHS, IN-PATIENTS 1936	29		
,, V.—BIRTHS & DEATHS REGISTERED FOR THE PAST FIVE YEARS	41		
,, VI.—BIRTHS & DEATHS REGISTER IN 1936 ACCORDING TO NATIONALITIES	41		
,, VII.—INFANTILE MORTALITY	41		
,, VIII.—DEATHS GROUPED ACCORDING TO AGE, SEX & NATIONALITY	42		
,, IX.—DEATHS FROM PRINCIPAL CAUSES	43		
,, X.—POPULATION	45		
,, XI.—ESTATE HEALTH STATISTICS	46		
,, XII.—VETERINARY REPORT	47		
,, XIII.—CLIMATOLOGICAL SUMMARY	49		

Map of Kelantan on which Hospitals, Dispensaries, halting places of various travelling units, are indicated.

STATE OF KELANTAN.
ANNUAL REPORT OF THE MEDICAL DEPARTMENT
FOR THE YEAR 1936.

INTRODUCTION.

As registration of births and deaths is still very unreliable, vital statistics give no true index of the health of the State. Using hospital figures as a basis and making due allowance for the marked increase in malarial admissions (this was due to the opening up of an iron mine in a malarious district by a Japanese firm), then the health of the State in general compared with previous years was good. Kelantan remained free from serious epidemic diseases and the true incidence of malaria was less.

Progress was made in the further development of the travelling dispensary system; three new units being introduced. These units cover practically the whole of the State, even where communications are bad. A total of 199,463 patients were treated by these dispensaries compared with 65,579 in 1935, 80 percent of whom were Malays.

NEW BUILDINGS.

New Hospital, Kota Bharu.—One new ward of 30 beds was completed in December 1936. Two wards of similar size were under construction and will be completed early next year. In addition new quarters for the Assistant Medical and Health Officer were constructed and ready for occupation by the end of November. Plans for the construction of

- (a) new administration block
- (b) operating theatre
- (c) laboratory and X-ray building

were approved. Work starts on these in January 1937.

LEGISLATION.

A new Labour Code was passed and became law during the year which included all nationalities.

In addition several minor amendments to existing ordinances were made. Of these Notification No. 63 of 1937 gave powers to a District Officer to prohibit absolutely cattle grazing in recreation grounds inside notified areas,

NEW DEVELOPMENTS.

Travelling Dispensaries.—The success of the travelling dispensary units in providing treatment and advice in kampongs has justified the further expansion of these units.

Provision has been made in the 1937 estimates for the purchase of a second out-board motor boat for river kampong work on the Kelantan River proper.

Infant Welfare.—Provision has been in the 1937 estimates for the renting and equipping of a new shop house in the market area of Kota Bharu. Government has been fortunate in obtaining the services of a fully qualified Assistant Lady Medical Officer (Dr. Nya-Sim Mah, L. M. S., Singapore) who has been appointed to take charge of this centre and takes up duties on 1st January, 1937.

Radiography.—Provision has also been made for the purchase of a small X-ray unit in 1937. This will supply a much needed want and its help will be invaluable.

Training of "bidans".—A scheme for the training of local "bidans" has been approved and it is hoped to make a start with this scheme early in 1937. The difficulty here is the lack of education amongst Kelantan Malay women and suitable candidates are hard to find.

I.—ADMINISTRATION.

(A).—Staff.

Dr. T. F. Strang continued to act as Chief Medical Officer throughout the year.

Dr. W. J. Geale acted as Medical Officer, Ulu Kelantan (part-time) throughout the year.

Dr. Lim Shin Thwin's services were terminated on the appointment of one Asst: Medical and Health Officer on 12.1.36.

Mrs. M. M. Waugh who was acting as Matron grade II in charge of European and Women's Hospitals, Kota Bharu, proceeded on leave on 26th March, 1936, being relieved by Miss J. D. Scott.

Mrs. Waugh returned from leave on 26th October and Miss Scott was seconded to Johore Bharu.

Mr. G. K. Pillay remained as Chief Hospital Assistant, Kota Bharu, throughout the year. Mr. E. P. Canagasaby relieved Mr. Sie Sing Chang as Chief Hospital Assistant, Kuala Krai on 20th January. Mr. Lim Kean Hong acted as Deputy Health Officer, Tumpat, till 21st January when he was transferred to Pasir Mas as Dresser in charge there. Mr. Sie Sing Chang relieved him at Tumpat.

Mr. K. M. Kurup acted as Dresser in Charge, Pasir Mas till 22nd January when he was transferred to Kota Bharu being relieved by Mr. Lim Kean Hong.

Mr. Go Boui Gi remained in charge of Pasir Puteh Dispensary throughout the year.

New Appointments.—The following appointments were made in 1936:—

DR. MAH KEE LUI as Asst: Medical and Health Officer on 12th January.

MR. K. G. CHELLIAH as dresser grade II on 13th January.

SYED ABDUL RAZAK BIN SYED KARIM as dresser grade II on 1st February.

MR. S. G. K. PILLAY as Health Inspector on 14th March.

MR. TEO KEE SING as probationer dresser on 22nd April.

SYED ISMAIL BIN SYED A. KARIM as dresser grade III on 4th August.

Retirements.—Haji Ismail bin Haji Awang was boarded out of the service on 18th May, 1936.

Leave.—

MRS. J. PESTANA from 3.9.36 to 23.9.36

MISS A. OLIVEIRO from 10.12.36 to 4.1.37

MR. SIE SING CHANG from 8.10.36 to 21.2.37

CHE MATT BIN SULEIMAN from 15.11.36 to 16.1.37

(B).—Financial.

The actual expenditure on Medical and Health services and revenue collected for the year under review were:—

EXPENDITURE.

Actual ~~for the whole State~~

(including special services) .. \$181,207.97

This represents 7.31% of the total expenditure of the State.

REVENUE.

Derived from hospital fees, sales of medicines, licence fees and miscellaneous:—

				\$
Kota Bharu	..	..	..	9,004.92
Kuala Krai	..	..	..	1,908.02
Tumpat	..	..	..	310.41
Pasir Mas	..	..	..	— .10
			Total ..	\$11,223.45

II.— PUBLIC HEALTH.

Registration of births and deaths became compulsory only in 1930. Very few patients except those admitted to hospital are seen by any one capable of making a diagnosis and coupled with the fact that Deputy Registrars themselves have little if any knowledge of medicine, it follows that registered causes of deaths are unreliable as an index of the health of the State.

Population.

In estimating the population of Kelantan during the years 1933, 1934, and 1935 the method of calculation used was based on the formula; 1931 Census plus excess of births over deaths and plus or minus the difference between immigration and emigration during the year. This in Kelantan has been found to be most inaccurate as no reliance can be put on the immigration and emigration figures and notification of births and deaths is also incomplete.

Immigration and emigration do not effect population figures to any marked extent in Kelantan.

The geometric progression method has been used and the total population for the year 1936 was 395,817 as compared with 389,187 in 1935, an increase of 6,630.

Appendix X gives population for the last five years.

Births.

During the year 11,652 births were registered compared with 10,979 in 1935, giving a crude birth rate of 29.44 in 1936 as compared with 28.21 in 1935.

The following table shows crude birth rate of all races for the past six years:—

1931	..	..	..	26.42	per mille
1932	..	..	..	34.66	„ „
1933	..	..	..	29.15	„ „
1934	..	..	..	28.99	„ „
1935	..	..	..	28.21	„ „
1936	..	..	..	29.44	„ „

The ratio of male to female births was 1,063 males per 1,000 females born. Appendix V gives total number of births for the last five years.

Deaths.

The total number of deaths reported in 1936 was 8,556 (compared with 7,522 in 1935), giving a crude death rate for all races of 21.36 per mille compared with 19.33 per mille in 1935.

As previously stated these figures are inaccurate and sound conclusions cannot be drawn from them.

Appendix VI shows total deaths for the past five years by races.

Appendix VIII shows death by age group.

Appendix IX shows death from principle causes.

Infantile Mortality.

This year 1,520 deaths under one year of age were reported (compared with 1,454 in 1935) giving a crude infantile mortality rate of 130.07 per 1,000 births (compared with 132.43 in 1935).

The following shows crude infantile mortality rates for the last six years:—

1931	..	..	..	135.75 per mille
1932	..	..	..	111.76 „ „
1933	..	..	..	129.60 „ „
1934	..	..	..	130.14 „ „
1935	..	..	..	132.43 „ „
1936	..	..	..	130.07 „ „

Table showing sick and invaliding and death rates of European and Non-European officials, 1936:—

		Europ.	Non-Europ.
Total number of officials resident	..	28	1,012
Average number resident	..	28	1,012
Total number on sick list	..	7	173
Total number of days on sick list	..	152	1,976
Average daily number on sick list	..	0.019	0.47
Percentage of sick to average number resident	..	25.0%	17.09%
Average number of days on sick list for each patient	..	21.71	11.42
Average sick time to each resident	..	5.42	1.95
Total number invalidated	..	—	10
Percentage of invaliding to total resident	..	—	0.98%
Total deaths	..	—	2
Percentage of deaths to total residents	..	—	0.19%
Percentage of deaths to total average number residents	..	—	0.19%

III.—HYGIENE AND SANITATION.

(i).—MALARIA.

There was a marked increase in the number of cases admitted to hospitals suffering from malaria during the year; 1,390 with 61 deaths compared with

641 cases and 64 deaths in 1935. This is not due to an increased incidence but is largely accounted for by the opening of a new iron mine by a Japanese Mining Company, and their introduction of unacclimatised Chinese labour chiefly from North China.

The area opened up is in foot hills in Ulu Kelantan, which is an ideal country for the formation of breeding places for *A. maculatus*.

Total admissions to Government Hospitals of cases diagnosed as malaria were:—

<i>Year.</i>	<i>Admission.</i>				<i>Deaths.</i>	
1930	1,453	..	..	61
1931	1,017	..	..	34
1932	821	..	..	27
1933	955	..	..	34
1934	739	..	..	37
1935	641	..	..	64
1936	1,390	..	..	61

The proportion of cases diagnosed as malaria admitted to Government Hospitals to total admissions from all cases for seven years is as follows:—

<i>Year.</i>	<i>Government Hospitals.</i>		<i>Estate Hospitals.</i>	
1930	25.3%	..
1931	17.44	..
1932	15.65	..
1933	17.24	..
1934	15.18	..
1935	12.41	..
1936	25.9	..

(ii).—PLAQUE.

No cases of plague occurred.

(iii).—CHOLERA.

No cases of cholera occurred.

In view of the proximity of Siam, cholera must always be considered to be a menace. Special precautions are taken; all trains from Siam are met at Sungai Golok and boats at Tumpat. Passengers are examined and undertakings given. Police, Penggawas and Penghulus are warned to be on the look out and to report suspected cases.

During the dry months of April, May, June and July the usual practice of rinsing wells at regular intervals was carried out.

One thousand two hundred and six (1206) anti-cholera injections were given to pilgrims to Mecca.

(iv).—SMALL-POX.

No cases of small-pox occurred.

Vaccinations were carried out as in previous years. This is done at Government Hospitals, out-door dispensaries and by travelling dressers and vaccinators who tour the State district by district.

This year 12,451 vaccinations were done compared with 12,746 in 1935.

Of this total

7,655 were done by vaccinators.
 2,360 were done by Travelling Motor Dispensaries.
 1,362 were done by Travelling Pack Dispensaries.
 973 were done at the out-patient department, Kota Bharu.
 62 were done at Tumpat Dispensary.
 30 were done as Kuala Krai Hospital.
 9 were done at Pasir Puteh Dispensary.

12,451

(v).—TROPICAL TYPHUS.

No cases of tropical typhus occurred.

(vi).—ENTERIC FEVER.

A total of 17 cases with 1 death occurred. Of these 4 were prisoners, 5 from Kuala Krai, and 12 from Kota Bharu. It was found impossible to trace the source of infection in any of these cases.

The whole of the jail staff and prisoners were given T. A. B. vaccine and new arrivals in the jail are treated in similar manner.

(vii).—DYSENTERY AND DIARRHOEA.

There were in all 144 cases admitted to hospitals compared with 115 in 1935, representing 2.69% of total admissions compared with 2.25 in 1935. Of these 144 cases, 74 showed the presence of *E. Histolytica* on stool examination. It is surprising that Bacillary Dysentery is not more prevalent considering the very primitive sanitary measures and the shallow unprotected wells found in the majority of kampongs.

This year there were only five outbreaks of bacillary dysentery reported from kampongs none of which were serious.

(viii).—CEREBRO-SPINAL MENINGITIS.

No case occurred.

(ix).—DIPHTHERIA.

There was one case and one death. This was a Siamese girl who came from Sungei Golok, Siam, direct to hospital.

(x).—LEPROSY.

Fourteen (14) cases were diagnosed during the year, of whom 6 were Malays and the others being Chinese and Indians.

This disease has shown a gradual increase during the past few years and is in Kelantan not uncommon amongst Malays. The number recorded are no true indication of the incidence as it is the custom for relatives to conceal victims of this disease, and in a country like Kelantan where kampongs are scattered this is easy.

It has been found that on search being made for reported suspects in kampongs that it is a common practice for them to slip over the border into Siam.

(xi).—TUBERCULOSIS.

One hundred and ninety two (192) cases were treated in Government Hospitals this year with 45 deaths compared with 125 and 20 deaths in 1935.

This disease is much more prevalent than these figures indicate.

Cases are rarely seen except in the advanced stages.

Bad housing, over-crowding, chronic malaria and ankylostomiasis are all predisposing causes. The North-East monsoon with continued rain, high humidity and floods, result in a scarcity of fresh vegetables and fresh fish and reduces resistance.

Housing conditions in notified areas are being gradually improved and as fast as new buildings are completed the old slum type of houses are demolished.

Beds for tubercular patients are available in all hospitals and in Kota Bharu the male patients are housed in special wards with accommodation for 20 beds.

A Government notification came into force at the end of the year authorising the yearly examination of all Government servants for pulmonary tuberculosis, thus bringing Kelantan into line with the Straits Settlements and Federated Malay States. This was long overdue and supplied a much needed want as the numbers of Government servants boarded out from pulmonary tuberculosis each year has steadily increased. Attempts were made to introduce this order several years ago, but were sidetracked. Now fortunately the Malays have come to realise that medical examination and early diagnosis does not mean the loss of employment.

(xii).—MUMPS.

There were 91 cases of mumps reported, of which 69 occurred amongst prisoners in the Kota Bharu Jail.

(xiii).—MEASLES.

There were 10 cases of measles treated in hospitals.

(xiv).—CHICKEN-POX.

There was a small outbreak of chicken-pox which affected chiefly Pasir Puteh District.

GENERAL MEASURES OF SANITATION.

(1) ANTI-MALARIAL MEASURES.

The health staff was increased by the appointment of a fully qualified Sanitary Inspector. They are chiefly engaged in anti-malarial measures. A sum of \$6,700 was provided for this work during the year. Oiling is carried out and anti-malarial drains maintained in seven notified areas in Kelantan. A total of 13,248 gallons of anti-malarial oil were used,

whilst 5,658 feet of new earth drains were dug. In addition 5,570 feet of concrete drains were laid. In the coastal districts the results of larval surveys in notified areas; *A. barbirostoris* was found on several occasions whilst *A. aconitus*, *A. vagus* and *A. hyrcanus* were frequently found. Adequate and effective drainage is difficult to obtain in coast districts as it is very low lying and in Kota Bharu numerous "alors" constitute a serious anti-malarial problem.

In Ulu Kelantan the country is hilly and breeding of *A. maculatus* is widely distributed ~~and~~ making the control of malaria difficult.

The difficulty in Kuala Krai until this year has been the formation of pools in the Sungai Krai river during the dry season. Owing to heavy jungle on its banks these have been inaccessible to oiling gangs. *A. barbirostoris* was found breeding in large numbers and caused a small outbreak of malaria during the month of May. Purely as an anti-malarial measure the Irrigation and Drainage Department have cleared this stream of snags, canalised its channel and cleared its edges over a distance of two miles from its outfall into the Kelantan river. A small rubber holding outside the Sanitary Board limits where *A. maculatus* were found to be breeding has been brought under control.

In Dabong where the F.M.S. Railways co-operate in this work, the chief sources of infection were found in the ravine and hill slopes just outside the town limits. Here Chinese squatters had cleared off the vegetation and uncovered seepages.

Regular mosquito surveys were made in houses outside oiling areas with a view to controlling breeding of *Culex* and *Stegomia*.

In rural areas travelling dispensaries distribute free quinine and in two selected Police Stations prophylaxis by drugs is practiced, Atebrin and quinine is given to the staff regularly. The numbers are small, the personnel are disciplined and the results have been satisfactory. Particularly has this been so at Bukit Yong Police Station where the absence from duty, as result of malaria has dropped from 90% to nil. The cost where small numbers are involved is not high.

(ii).—SEWAGE DISPOSAL.

In kampongs and rural villages sanitation is still very primitive. Where latrines exist they are generally of the shallow pit type and more often than not situated immediately adjacent to the source of water supply (generally a shallow unprotected well). The majority of the people, however, prefer to use the nearest jungle edge, or patch of long grass for this purpose. The river population are better situated and use the river. On the coast the foreshore is the place of choice.

In notified areas steady progress, if slow, towards obtaining satisfactory conservancy is being made. In Kota Bharu, Kuala Krai, Pasir Mas and Tumpat a single bucket system is in use, and night soil is disposed of by trenching out. In Kuala Krai and Tumpat this work is undertaken by the Town Board but in Kota Bharu and Pasir Mas removal of night soil is done by contractors. Special lorries are maintained in Kota Bharu for this purpose. Considerable extension of this system however is necessary in all these notified areas as quite a large proportion of the Malay houses are still without latrines. The opportunity was taken in dealing with applications for repairs of the Malay type of house, of insisting upon cementing under the "dapor", building of latrines and the construction of proper drains, being a condition of approval. In Kuala Krai and Pasir Mas this system is

fairly satisfactory as the lay out is good. In Kota Bharu satisfactory conservancy is not yet practicable. In the old town area, which unfortunately was not completely burned out during the fire of 1929, main streets are narrow and the centre of the blocks or squares formed by shop houses are occupied by groups of Malay houses, the majority of which abut against the back walls of the shop houses themselves; and render the construction of back lanes impossible. Acquiring the land necessary to construct back lanes in this part of the town was found to be impracticable and other more gradual methods have been adopted. In this area no repairs to buildings are permitted and as houses are demolished new buildings must follow new regulations with regard to type, distance from centre of road and provision for 14 feet back lane.

(iii).—REFUSE DISPOSAL.

In larger notified areas occupiers of all shop houses and better class houses are required to have and use rubbish bins of an approved type. These bins are emptied daily and the contents disposed off by incineration.

In Kuala Krai and Kota Bharu large Municipal rubbish bins are placed on the road side at suitable points convenient to the public. In Kuala Krai these are of concrete and in Kota Bharu they are large metal bins on concrete platforms. The contents of these bins are removed by special motor lorries to the incinerators whilst in Kuala Krai and other towns hand carts are used. It is hoped that several of the inefficient incinerators at present in use will be replaced by the Bee-hive type next year. This work is done by Municipal coolies.

In kampongs rubbish and refuse is sometimes disposed off by burning and thereafter burying.

(iv).—WATER SUPPLY.

In rural districts water supply is obtained from rivers or small streams or what is much more common shallow unprotected wells. Where sanitation is so primitive and sources of water supply questionable, it is amazing that there have been no major outbreaks of diseases due to polluted water.

In the bigger villages and towns, shallow wells, the majority of which fortunately have concrete lining and cement apron, constitute the chief source of water supply. It is only in Kota Bharu the State capital that laid on water supply is to be found and that has only been available since December 1935. The source of supply here is from three deep wells, each fitted with an electric pump. Water is pumped up to a large service tank (62 feet high). This water is entirely untreated, yet repeated analysis both chemical and bacteriological have given most satisfactory results.

One of the conditions of the re-issuing of a licence to licensed premises in Kota Bharu was that they must take Municipal water supply. No new house or shop house is permitted to have a well if it is sited within a reasonable distance from a water main.

Schemes with a view to providing Pasir Mas and Kuala Krai with a laid on water supply were under consideration during the year. The only feasible source was found to be the Kelantan river and as this will entail a very heavy capital cost in providing pumps, tanks and treatment plants it was decided to keep the question open until such time as State finances permit of the undertaking.

(v).—OFFENSIVE TRADES.

Regular visits of inspection are made by members of the sanitary staff to markets, piggeries and dairies, and any insanitary conditions are dealt with.

Dairy farms and piggeries are not permitted inside notified areas.

(vi).—HOUSE VISITING.

During the year detailed sanitary surveys were carried out in eleven villages and steps have been taken to have them gazetted to bring them under control. These were found to be insanitary with no drainage system; such latrines as existed were highly insanitary. Lack of ventilation and overcrowding was prevalent. The opportunity is taken, when applications to repair houses are received, of insisting upon proper sullage drainage and cementing under "dapor" and the building of latrines where these do not exist. In this way progress is being made in improving housing and sanitary conditions of the Malay type of houses.

(vii).—ESTATE VISITING.

All estates employing a sufficient number of Indian labourers to come under the labour enactment were visited monthly by Dr. W. J. Geale, the Visiting Medical Practitioner, and biannually by the Chief Medical Officer. The Visiting Medical Practitioner spends one full day on each estate and carries out a detailed inspection of anti-malarial measures and examines each labourer and dependent. The standard of anti-malarial work is high and the majority of the managers co-operate loyally in this work. Housing is generally satisfactory. A new type of semi-detached cooly lines have been built on a considerable number of estates and is a decided improvement on the older type of barrack lines.

On the majority of estates, bored-hole latrines are used and are most satisfactory.

The death rate amongst Indians was 27.45 per mille compared with 35.82 in 1935, 37.06 in 1934 and 31.28 in 1933. Births for this nationality numbered 66 with 11 deaths under one year, compared with 40 and 22 deaths in 1935, and 14 births with 21 deaths in 1934.

The proportion of cases diagnosed as malaria to total admissions was 30.26 compared with 35.71 in 1935 and 30.31 in 1934.

Health on estates showed considerable improvement during the year under review. The reduction in the infantile mortality rate is most gratifying and is due largely to the fact that managers are sending pregnant women to the Female Hospital in Kota Bharu for pre-natal treatment and for confinement.

(viii).—SCHOOL HYGIENE:

There are 60 Malay Vernacular Schools in the State. Many of these are situated in outlying districts too inaccessible for routine inspection.

During the year 47 schools with 4,879 children were inspected and details recorded in a special card kept for the purpose.

The teachers are supplied with quinine capsules, ointments and antiseptics for treatment of common ailments among the boys. After examination a list of pupils with their required treatment is given to the teacher. He presents this to the travelling dresser who visits the school once per week.

Over 80% of the schools are covered by the travelling dispensaries. Acute cases are advised and every help given to them to come to hospital, where treatment is given free to students.

The general health and cleanliness of the boys was on the whole satisfactory - no serious outbreaks of any infectious diseases occurred during the year. Those found suffering from infectious or contagious diseases were excluded from schools until free from infection. Two schools in the Pasir Puteh district were closed temporarily on account of an outbreak of chicken-pox.

Dental caries is very common. Unfortunately nothing more than verbal advice on the importance of cleaning the teeth is practicable.

Yaws.—While yaws scars are very common, less than 10 cases of active yaws were seen in the 4,879 pupils examined, compared with 48 cases in 1935. This decrease is due no doubt to the increased travelling dispensary services.

Spleen rate.—In reports on school hygiene a spleen rate percentage is usually given for all schools covered by the report. Such an account would be misleading in Kelantan. Spleen rate in areas where anti-malarial measures are in force is quite low while in outlying districts high e. g. Padang Garong school in Kota Bharu shows .9% while Ga-al School in Pasir Puteh district shows 7.36%. A watch is kept on any school showing a high rate and the attention of travelling dressers drawn to it.

Minor skin ailments are very common, mainly septic sores, scabies and a fungus infections known locally as "Panau" (microsporon furfur).

Nutrition.—During the routine examinations a special look out was made for cases of under nutrition. While undersized and anaemic children were common, only a few isolated cases of true underfeeding were seen. Improper rather than insufficient feeding, worm infection and malaria appear to be the causes of under-development.

Sanitation.—Sanitation in schools except those in towns is primitive. Efforts are being made to improve matters.

(ix)—LABOUR CONDITIONS.

(A)—On Estates.

Estate labour in Kelantan is composed of Malays, Tamils and Chinese. Several estates employ local Malays exclusively and as these have only recently come under the new Labour Code accurate figures are not available, nor has it been possible so far to assess their standard of health. Only on one estate is the Malay labour force housed entirely, in the remainder their kampongs adjoin the estates and they come and go daily. To a great extent they have outgrown the tendency to work two or three days, and thereafter retire for a week, and estate managers have not now the same amount of trouble in keeping a stable labour force. Accepted health standards will be somewhat difficult to attain, as little if any control is possible in their kampongs. With the new Labour Code it is now possible to bring pressure to bear on owners and managers employing Malay labour to improve housing and sanitary conditions up to the standard of those estates which have been controlled under the old Indian Labour Enactment for many years.

On estates employing Indians, health showed a marked improvement. Only 143 recruits arrived in Kelantan from India. The increase in the price of rubber and the demand for labour aided to a certain extent a slight tendency for groups of labourers to migrate from one estate to another. The local Planters' Association are fully cognisant of the detrimental effect of

this upon health, and partly on this account and partly for economic reasons they have taken steps to prevent this. In a small State like Kelantan where communications are not yet highly developed schemes devised for the prevention of this movement have a chance of success.

Total Indian estate population in 1936 was 1,639 compared with 1,675 in 1935.

Total Chinese employed on estates in 1936 was 980 and their standard of health compared favourably with that of the Indians. Housing conditions however are not all that they should be and efforts are now being made to bring them up to accepted standards.

(B) — On Mines.

On the Japanese Iron Mine at Temangan where 545 Chinese are employed health conditions were appalling during the year under review. Due partly to the fact that this land was being newly opened up from jungle, but in the main to the delay in getting active anti-malarial measures started, Malaria is highly prevalent in this area. Great pressure has been brought to bear on the management and it is hoped that this will have the desired effect.

(C) — Government Labour.

Government labourers are all local Malays who live in their own kampongs. The health amongst them has been good. In common with the rest of the Malay community free treatment is provided by Government Hospitals, Dispensaries and Travelling Dispensaries.

(x).—HOUSING AND TOWN PLANNING.

The lay-out in the larger notified areas was completed several years ago, and with the exception of Kota Bharu all were new, so that no difficulty existed in making adequate provision for streets, shop lots and back lanes. This work was done by the District Officers with the co-operation of the State Engineer, Chief Medical Officer and Superintendent of Surveys. In Kota Bharu there is a town planning committee for this purpose, presided over by the District Officer and consisting of four unofficial members, the Superintendent of Lands, Superintendent of Surveys, State Engineer and the Chief Medical Officer. Considerable difficulty was experienced in the old town area of Kota Bharu where houses of the barrack type, constructed of wood and corrugated iron had been built with no provision for back lanes and where the streets are narrow and the shop lots had been sub-divided.

Fortunately half of this area was burned out some years ago and Government completed the the acquisition of these lots during the year. The burnt out area has been cleared and a padang made. In the remaining part of the old town no repairs are permitted and each year several groups of buildings are demolished. Demolition is made to keep pace with the erection of new houses, as a definite shortage of houses exists in Kota Bharu.

Improvement in trade has led to a marked increase in building, particularly is this so in Kota Bharu and and Pasir Mas. In Kota Bharua 18 new shop houses were completed in the new town area, where a proper lay-out has been possible. These are permanent and substantial buildings of modern type which comply with accepted standards in the Colony and the Federated Malay States.

In Pasir Mas 31 new semi-permanent houses were constructed of approved design.

In rural areas the kampong type of dwelling houses predominate and these are generally constructed of squared timber frame, attap roof, plaited bamboo walls and are raised off the ground from four to six feet. Being very primitive in type and construction, they are usually badly lighted and ventilated, with no provision for the drainage of waste and sullage water. Kitchens with plank floor raised above the ground and bath rooms of similar description render the place below the house, and its immediate neighbourhood very insanitary. However slow but steady progress is being made wherever possible, to deal with these defects in the existing houses. The erection of new houses of this type is being strictly controlled with a view to making them comply with the essential sanitary requirements.

(xi).—FOOD IN RELATION TO HEALTH & DISEASES.

Inspection and control of food is carried out by members of the health staff.

Eating shops, coffee shops, bakeries, milk vendors, sellers of "Ayer manis" and aerated water factories are regulary inspected and licensed. All applications for such licences are referred to the Medical Department and it is the practice for the District Officers to inspect such premises together with the Chief Medical Officer. In Kota Bharu where water has recently been laid on, it was made one of the conditions of renewal of licences that the existing well should be closed and the premises connected to the Municipal water supply.

(xii).—MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE & SANITATION.

Travelling Dressers and Sanitary Inspectors during the course of their routine work endeavour to explain the dangers of insanitary conditions and how they can be avoided by complying with the requirements of the various rules and by-laws appertaining to Sanitation and Hygiene.

In schools, hygiene was recently introduced into the curriculum and as time goes on and the standard of teaching improves the desired results should be obtained.

An Infant Welfare Centre is to be opened in Kota Bharu in 1937 and the opportunity will be taken of instructing mothers in hygiene.

A Health Visitor who was appointed two years ago gives advice and instruction in the course of her visits to kampongs and houses.

(xiii).—TRAINING OF SANITARY PERSONNEL.

No facilities exist for the training of such personnel in Kelantan. The Sanitary Inspectors all hold the Diploma of the Royal Sanitary Institute obtained in Singapore.

IV.—PORT HEALTH WORK AND ADMINISTRATION.

Kelantan has no port designated under Article 28 of the International Sanitary Convention of 1926. Coasting steamers plying between Singapore and Bangkok call at Tumpat at bi-weekly intervals. The Chief Hospital Assistant in charge of the Tumpat Dispensary acts as Deputy Health Officer and inspects all passengers. Chinese and native craft are boarded by Customs

Officers and in the event of any passenger wishing to disembark or sickness amongst the crew the Deputy Health Officer is informed.

Two hundred and twenty nine (229) passenger steamers with 270 passengers, 32 of whom were Europeans, called at Tumpat during the year.

No cases of infectious diseases were seen.

V.—MATERNITY AND CHILD WELFARE.

Maternity beds are available in the Women's Hospital, Kota Bharu and every effort is being made to induce women to make use of the facilities available. Some progress has been made with Indians and Chinese, but Malays are still slow to respond to inducements. It is hoped that the establishment of the Infant Welfare Centre in 1937 will help to remedy this.

Pressure was brought to bear upon estate managers to send in to hospital expectant mothers of their labour forces for pre-natal treatment and delivery, and Government agreed to waive hospital fees for such cases. The response has been fair but there is still room for improvement.

The following table gives the number of deliveries in the Female Hospital in the years 1934, 1935 and 1936:—

	<i>Indians.</i>	<i>Chinese.</i>	<i>Malays.</i>	<i>Japanese.</i>	<i>Arab.</i>	<i>Europs.</i>	<i>Total.</i>
1934 ..	—	—	—	—	—	—	41
1935 ..	40	24	2	1	—	1	68
1936 ..	57	52	3	2	1	1	116

There were no maternal deaths during the year under review.

Analysis of cases is as follows:—

	<i>Normal.</i>	<i>Breach.</i>	<i>Forceps.</i>	<i>Retained</i>	<i>Mis-</i>	<i>Total.</i>
				<i>Placenta.</i>	<i>carriage.</i>	
Chinese	50	1	1	—	—	52
Indians	55	—	1	1	—	57
English	—	—	1	—	—	1
Malays	1	—	—	—	1	3
Japanese	2	—	—	—	—	2
Arabs	1	—	—	—	—	1
	109	1	3	1	1	116

There were three sets of twins born to Indians.

Training and Work of Midwives.

Training of midwives so far has not been undertaken in Kelantan.

Provision has been made in 1937 estimates for the training of four Malay "bidans" on the same lines as Class B of the S. S. Ordinance.

The intention being ultimately to have a sufficient number of such trained women to cover out-lying districts. The difficulty however in Kelantan is that 95% of the Malay women are illiterate.

Infant Welfare Service.

No Infant Welfare Centre proper, distinct from hospital out-patient departments as yet has been established, although provision has been made for one in the 1937 estimates. A fully qualified Assistant Lady Medical Officer

has been appointed, and a shop house rented in the centre of Kota Bharu Town. This centre will be opened early in 1937.

Mothers have been encouraged to bring their children to the Female Hospital where there is special out-patient clinic for this type of patient.

The Health Nurse visits newly born infants by following up birth notifications in the town of Kota Bharu and the adjacent kampongs.

This is up-hill work in a State such as Kelantan where old customs and beliefs are deeply rooted and where the majority of the women folks are illiterate. Education, patience and time are required to bring about changes in out look.

Visits to houses in Kota Bharu district:—

To newly born infants.

				1935	1936
Malays	..	..	..	530	406
Chinese	..	..	..	223	192
Indians	..	..	..	6	28
Japanese	..	..	..	4	---

Visit to Women

Malays	..	..	..	534	978
Chinese	..	..	..	227	491
Indians	..	..	..	6	79
Japanese	..	..	..	4	1

Visit to Children.

Malays	..	..	..	72	104
Chinese	..	..	..	25	38
Indians	..	..	..	—	17
Total	..	..	..	<u>1,631</u>	<u>2,334</u>

Attendance at Clinic at Female Hospital.

			1935	1936
Infants	..	..	150	211
Total number of attendances			470	310

This work was only started two years ago and although numbers are not large, progress is being made.

VI.—HOSPITALS AND DISPENSARIES.

(1) HOSPITAL IN-PATIENTS.

The following tables show the hospitals maintained by the Medical Department, the average daily number in each, the total number of patients admitted during the year, the total number of deaths and death rate per 100 treated (Leper Settlement not included) :---

Hospitals.	Average daily No. of patients	Patients treated			Deaths	Percentage of deaths to total treated
		Male	Female	Total		
*Kota Bharu	186	2,887	645	3,532	138	3.74
*Kuala Krai	53	1,435	153	1,588	105	6.46
Mental Hospital	38	45	20	65	1	0.99

* Jail wards included.

(i) *General Diseases.* There were 116 admissions for syphilis, 129 for gonorrhoea and 9 for soft sore and bubo. Of these admissions for syphilis only 32 were in the primary stages.

(ii) *Pneumonia.* The following table gives the total number of lobar and broncho pneumonia admitted to Government Hospitals since 1931:-

Year.	No. of Cases.	No. of deaths.	Death rates.
1931	102	27	25.87%
1932	174	38	21.86%
1933	135	36	26.66%
1934	112	42	37.5 %
1935	123	31	25.27%
1936	123	48	39.02%

The death rate for pneumonia still remains fairly high and seems to be little affected by race or method of treatment.

(iii) *Pulmonary Tuberculosis.* The number of admissions to hospitals was 192 as compared with 125 in 1935. The number of deaths was 45 or 23.43 percent, compared with 20 or 16 percent in 1935. The lack of X-ray outfit has somewhat handicapped modern treatment, but this want will be remedied in 1937.

(iv) *Dysentery.* In all 104 cases were admitted to Hospitals, compared with 115 in 1935. Of these 104 cases, 74 were classified as amoebic and 30 as bacillary.

(v) *Beri-beri.* There were 37 admissions for beri-beri compared with 42 in 1935. The death rate was 21.62%. Beri-beri is not prevalent in Kelantan owing to the fact that Kelantan rice which is under-milled is generally used.

(vi) *Chronic Ulcers.* The number of chronic ulcers admitted was 208 compared with 362 in 1935.

(vii) *Wounds resulting from Assaults.* There were 452 such cases treated compared with 693 in 1935. Of these 136 were caused by knives, parangs and klewang, 284 by blunt weapons and only 31 by fists.

There has been a reduction in numbers during past few years as shown by the accompanying table:-

Year.	Admissions.
1932	928
1933	852
1934	770
1935	492
1936	452

COST OF DIETS.

The appropriate cost of diets per head in hospitals in Kelantan for the year 1936 was:-

1st Class.	2nd Class.	3rd Class.
90 cents	32 cents	13 cents

(2) OUT-PATIENTS.

A total of 319,710 out-patients were treated at Government Hospitals and Dispensaries.

Out-patients classified under these headings:—

		Out-patients		Attendances	
		1935	1936	1935	1936
<i>I.</i>	<i>At Hospitals.</i>				
(a)	Kota Bharu	..	40,335	35,875	50,328
(b)	Kuala Krai	..	12,467	13,014	16,589
<i>II.</i>	<i>At Dispensaries</i>				
(a)	Pasir Puteh	..	7,280	6,714	20,157
(b)	Tumpat	..	12,024	11,784	22,321
(c)	Pasir Mas	..	18,686	17,872	23,034
			<u>90,792</u>	<u>85,259</u>	
<i>III.</i>	<i>At Travelling Dispensaries.</i>			Attendances.	
				1935	1936
(a)	<i>Ulu Kelantan Dist.</i>				
	Out-board Motor prau			6,844	15,816
(b)	<i>Pasir Mas District.</i>				
	Pack Dispensary		{ Both districts in 1935 covered by one unit.		31,227
(c)	<i>Tumpat District.</i>			15,178	
	Pack Dispensary				18,757
(d)	<i>Bachok District.</i>				
	Motor Travelling Dispensary				63,851
(e)	<i>P. Puteh, Kemuning & Temangan -do-</i>			43,557	
	Motor Travelling Dispensary				68,467
	Total attendances	..		198,008	319,710

(a), (c) and (e) are new units and were brought into use in 1936 for the first time.

Travelling work commenced in the beginning of February and stopped at the end of October. The onset of the North-East monsoon makes travelling very difficult during this season of the year.

Pack Dispensary units consist of one dresser and three coolies who travel on foot using bridle paths, traversing their districts once per month. Each district is sub-divided into sections which take five days to cover so that each unit has two days at Headquarters each week when a fresh supply of drugs is obtained.

The travelling dresser using an out-board motor prau now includes in his itinerary kampongs situated on the banks of the Sungai Lebir, the upper and lower Galas Rivers and the Pergau River. These are the main tributaries of the Kelantan River and upon their banks the greater proportion of the Ulu Kelantan population is to be found.

As yet Ulu Kelantan is practically unopened up, there are no roads, only a few short bridle paths. Provision has been made in the 1937 estimates for purchasing and equipping a second out-board motor prau for visiting the river population on the main Kelantan River.

The out-door dispensaries at Tumpat and Pasir Mas have each small emergency wards with two and eight beds respectively for emergency cases.

A new out-door dispensary is being built at Bachok and will be opened in 1937.

The total number of attendances for treatment for yaws was 26,725 in 1936 compared with 19,809 in 1935, and the following tables give details of treatment and attendances by races:—

A. Treatment	New Cases		Attendances	
	1935	1936	1935	1936
Intravenous injections (914)	9,581	10,769	1,606	1,423
Stovarsol	7,098	12,534	1,424	1,999
Total	16,679	23,303	3,130	3,422

B. Year	Malays	Chinese	Indians	Others
1935	18,288	706	191	625
1936	24,777	912	341	695

The increase in the number attending for treatment is not an indication of an increase in the incidence of the disease, but is due to the extension of the travelling dispensary facilities and the efficiency of modern treatment which is universally known and popular amongst Malays.

The following gives the numbers treated since 1928:—

1928	..	..	..	7,509
1929	..	..	..	8,288
1930	..	..	..	16,581
1931	..	..	..	21,004
1932	..	..	..	26,468
1933	..	..	..	22,093
1934	..	..	..	20,184
1935	..	..	..	20,134
1936	..	..	..	26,725

(3) Report on Pathological work done in Hospital Clinical Laboratories, Kelantan, for 1935 and 1936.

The total number of examinations made during the year was 14,325 compared with 10,508 in 1935.

The following is a summary of work done:—

		1935	1936
Autopsies	..	38	24
Serum for Kahn Tests	..	160	587
‡ Smears for organisms	..	475	505
‡ Urine for microscopic and chemical examinations	..	941	3,002
‡ Fcae. Microscopic examinations	..	4,582	4,680
‡ Blood films for malaria	..	4,107	5,343
Blood counts	..	?	13
Medical legal exhibits	..	205	71

‡ This work is done in out-door dispensary also.

Ten water samples for bacteriological examinations and 17 serums for agglutination re-action, Widal and Weil felix were sent to the Institute for Medical Research, Kuala Lumpur.

(4) **Surgery.**

The total number of operations performed in hospitals in Kelantan was 253 with 9 deaths, compared with 255 and 3 deaths in 1935.

(5) **Radiology.**

No facilities for this work existed during the year under review, but provision for the purchase of an X-ray plant and the building of X-ray room has been made in the 1937 estimates.

(6) **Ophthalmology.**

There are no special facilities for the carrying of this work in Kelantan.

(7) **Social Hygiene.**

There are no special venereal disease clinics but facilities exist for the treatment of these diseases at all hospitals and out-door dispensaries.

The number of new cases presenting themselves for treatment shows an increase.

<i>Year</i>	<i>New Cases</i>			
1931	1,029
1932	1,093
1933	1,088
1934	856
1935	2,533
1936	2,865

Whilst too much significance cannot be placed on these figures one is safe in saying that the incidence of venereal diseases is on the increase in Kelantan, particularly in the larger villages and Kota Bharu. This is to a certain extent due to easy divorce and largely to the unwillingness of sufferers to submit either to a full course of treatment or any treatment whatsoever.

(8) **Hospitals for Women.**

The Kota Bharu Women Hospital has accommodation for 60 beds and there is provision for 1st and 2nd class wards.

VII. INSTITUTIONS FOR MENTAL DISEASES AND FOR LEPROSY.

(A) **MENTAL HOSPITAL.**

Accommodation for mental cases consists of two male and one female wards and six masonic cells. Every effort is made to use this accommodation for observation cases only, and to arrange that all certified lunatics be transferred to the Mental Hospital in Singapore or Tanjong Rambutan. This procedure would be ideal were it possible to carry it out in every case. The main difficulties are; that the relatives of the Malay cases always raise opposition to transfer and the cost of maintenance and transport expenses are very high.

Admissions.

<i>Males</i>		<i>Females</i>		<i>Total</i>	
<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>
56	45	13	20	69	65

Total number treated was 101 compared with 105 in 1935.

Discharges.

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>
Recovered	19	8	4	9	23	17
Relieved	12	6	3	2	15	8
Not improved.						
Discharged in care of relatives	21	23	3	6	24	29
Transferred to Singapore	6	—	—	—	6	—
Not insane on admission	2	2	—	—	2	2
Total discharged	60	39	10	17	70	56

Deaths.

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>
	1	1	—	—	1	1

Absconded.

	<i>Males</i>		<i>Females</i>		<i>Total</i>	
	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>	<u>1935</u>	<u>1936</u>
	1	—	—	—	1	—

The number remaining on 31st December, 1936 was 46 of whom 33 were males and 13 females. The maximum and minimum numbers respectively were 46 and 31.

Maintained at the Central Mental Hospital, Tanjong Rambutan:—

	<u>1935</u>		<u>1936</u>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
Remained on January 1st	..	5	2	4
Absconded	..	1	—	—
Died	..	—	—	—
Discharged	..	—	—	—

Maintained at the Mental Hospital, Singapore:—

	<u>1935</u>		<u>1936</u>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
Remained on January 1st	..	21	7	27
Transferred from Kota Bharu	..	6	—	—
Discharged	..	4	—	2
Died	..	6	—	4

(B) LEPER SETTLEMENTS.

Accommodation for lepers in Kelantan consists of a small camp with accommodation for 12 patients situated on the sea side two miles from Tumpat village. There are two wards and kitchen. These are constructed of stone with cement floor and attap roofing. Each ward is divided into two rooms.

The patients are permitted out on the beach for bathing and exercise.

<i>Inmates.</i>	Total number remained on 31.12.35	..	10
Admitted during the year	..	..	6
Total number treated during the year	..	..	16
		<i>1935</i>	<i>1936</i>
Discharged cured	..	—	1
Died	..	—	1
Absconded	..	5	4
Transferred	..	—	—

An inmate (Indian estate cooly) was discharged cured and permitted to return to the estate where he is seen at the monthly inspection by the Visiting Medical Practitioner.

One patient died of influenzal pneumonia.

When the numbers become too large for the available accommodation cases are transferred to Pulau Jerejak or Sungai Buloh.

Maintained at Pulau Jerejak.

13 remained on January 1st
3 died
10 remained at the end of the year.

Maintained at Sungai Buloh.

2 remained throughout the year.

Treatment. Weekly injections of moogral E. C. C., cahulmoogra oil externally and Tai Fong Chee and Iodincin orally.

Various activities of the inmates. Every facility is given to the inmates to lead normal lives. They are encouraged to fish, bathe and play games besides being responsible for the maintenance of the camp compound. A gramophone, some periodicals and magazines have been supplied.

VIII.— PRISON HOSPITAL WARDS.

There are no prison hospitals but special wards for prisoners are allotted in Kota Bharu and Kuala Krai hospitals. A total of 322 convicts were admitted to the jail wards during the year and with 8 remaining on January first gives a total of 330 treated as against 257 in 1935. Of these 319 were discharged, 2 died and 9 cases remained in hospital on 31st December, 1936.

There were 69 cases of mumps, 5 cases of measles and 4 cases of enteric fever. No diseases due to nutritional deficiency were seen.

Thos. F. Strang,
CHIEF MEDICAL OFFICER,
KELANTAN.

23
APPENDIX I.

STATE HOSPITAL.

Chief Medical Officer	..	
Medical & Health Officer	..	in abeyance
Asst: Medical & Health Officer	..	1
Chief Hospital Assistant	..	1
Hospital Assistants	..	2
Dressers Grade II	..	3
Dressers Grade III	..	7
Probationer Dressers	..	3
Dispenser Grade II	..	1
Laboratory Dresser Grade II	..	1
Veterinary Inspector	..	1
Health Inspector	..	1
Store-Keeper Grade II	..	1
Asst: Store-Keeper	..	1
Clerical Staff	..	4
Travelling Dispenser	..	1
Vaccinator	..	1
Peons	..	3
Attendants	..	18
Cooks	..	4
Gardeners	..	4
Bullock-Cart Driver	..	1
Toties	..	3
Tukang Ayers	..	5
Watchman	..	1

EUROPEAN HOSPITAL & ASIATIC FEMALE WARDS.

Matron (assists in supervision of Female Hospital)		
Staff Nurses	..	2
Infant Welfare Nurse	..	1
Cook (European Hospital)	..	1
Boys (-do-)	..	2
Servant to Matron	..	1
Sewing Ayah	..	1
Attendants - Females	..	5
Cook (Female Hospital)	..	1
Tukang Ayer (European Hospital)	..	1
Gardener (-do-)	..	1
Toties	..	2
Watchman (Female Hospital)	..	1

KUALA KRAI HOSPITAL.

Medical Officer	..	(Part time)
Chief Hospital Assistant	..	1
Dressers Grade III	..	2
Attendants	..	6
Attendant - Female	..	1
Cooks	..	2
Toties	..	2
Gardener	..	1
Watchman	..	1

TUMPAT DISPENSARY.

Deputy Health Officer	..	1
Attendant	..	1
Watchman	..	1

PASIR PUTEH DISPENSARY.

Dresser-in-Charge	..	1
Attendant	..	1

PASIR MAS DISPENSARY.

Dresser-in-Charge	..	1
Attendant	..	1

TRAVERING DISPENSARIES:—*Out-Board Motor Prau, Ulu Kelantan District.*

Dresser Grade III	..	1
Steersman - Attendant	..	1

Motor Travelling Dispensary, P. Puteh Dist.

Dresser grade II	..	1
Driver-Attendant	..	1

Motor Travelling Dispensary, Kuala Krai Dist.

Dresser grade III	..	1
Driver-Attendant	..	1

Travelling Pack Disp., Pasir Mas Dist.

Dresser grade III	..	1
Coolies	..	3

Travelling Pack Disp., Tumpat Dist.

Dresser grade III	..	1
Coolies	..	3

ANTI-MALARIAL WORKS, KOTA BHARU.

Health Inspector	..	1
Mandor	..	1
Coolies	..	8

ANTI-MALARIAL WORKS, KUALA KRAI.

Sanitary Inspector	..	1
Mandor	..	1
Coolies	..	8

ANTI-MALARIAL WORKS, PASIR MAS.

Oiling Cooly	..	1
--------------	----	---

ANTI-MALARIAL WORKS, PASIR PUTEH.

Oiling Cooly	..	1
--------------	----	---

ANTI-MALARIAL WORKS, GUA MUSANG.

Oiling Cooly	..	1
--------------	----	---

ANTI-MALARIAL WORKS, DABONG (KUALA PERGAU).

Oiling Coolies	..	2
----------------	----	---

APPENDIX II.

EXPENDITURE, 1936.

Personal Emoluments	..	..	\$63,661.56
Allowance Travelling and Personal	..	..	4,555.34
Allowance Motor Car	..	..	720.00
Allowance Motor Cycle	..	..	1,518.22
Allowance Bicycle	..	..	107.79
Allowance Rations to Nurses	..	..	1,140.00
Allowance for Sisters (Washing)	..	..	468.00
Allowance for Sisters (Transport)	..	..	1,125.00
Allowance to Drs. Geale & Lim	..	..	2,500.00
Anti-Malarial Works Etc	..	..	3,646.66
Contingent	..	..	768.80
Diets and Extras	..	..	19,063.63
Equipment	..	..	3,994.60
Laundry	..	..	1,098.16
Lighting	..	..	2,947.02
Medicines & Instruments	..	..	34,857.24
Main: of Lunatics & Lepers	..	..	10,386.45
Main: of Travelling Dispensary	..	..	1,289.91
Rent for Pasir Mas Dispensary	..	..	5.00
Uniforms	..	..	1,025.75
Wages Hospital Servants etc.	..	..	19,809.54
Transport of Lepers	..	..	—
Transfer of Lunatics	..	..	165.94
Temporary Allowance	..	..	2,009.55
Telephone Subscription	..	..	570.00
Purchase of Motor Travelling Dispensary	..	..	2,455.24
Purchase of Furniture for Nurses Quarters	..	..	170.00
Purchase of Bicycle	..	..	42.00
Water Supply	..	..	1,015.99
House Rent to Mr. A. R. Kuppuswamy (while acting as Veterinary Inspector, Kelantan)	..	..	90.58
<i>Total</i>	..	..	<u>\$181,207.97</u>

APPENDIX III.

Revenue, 1936.

Kota Bharu.

Hospital Fees	..	..	\$8,327.96
Sales of Medicines	..	..	122.89
Licences Fees	..	..	260.00
Misc: Receipts (Births & Deaths)			217.00
Miscellaneous	..	..	<u>77.07</u>
			\$9,004.92

Kuala Krai.

Hospital Fees	..	..	\$1,807.10
Sales of Medicines	..	..	94.82
Miscellaneous	..	..	<u>6.10</u>
			\$1,908.02

Tinmpat.

Hospital Fees	..	..	9.50
Sales of Medicines	..	..	298.91
Miscellaneous	..	..	<u>2.00</u>
			\$310.41

Pasir Mas.

Sales of Medicines	..	..	<u>—.10</u>
			<u>—.10</u>
		Grand Total	..

\$11,223.45

APPENDIX IV.

KELANTAN GOVERNMENT HOSPITALS.

Return of Diseases and Deaths for the year 1936.

Diseases.

		Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
29.	Tuberculosis of the lymphatic system	...							
30.	Tuberculosis of the genito-urinary system	...							
31.	Tuberculosis of other organs:—								
	(1) Adrenal	...							
	(2) Other sites	...							
32.	Tuberculosis disseminated:—								
	(1) Acute	...							
	(2) Chronic	...							
	(3) Not distinguished as acute or chronic	...							
33.	Leprosy	...	1	14	15	—	—	—	15
34.	Syphilis:—								
	(1) Primary	2	32	34	34	—	—	—	—
	(2) Secondary	1	10	11	9	—	—	—	2
	(3) Tertiary	4	74	78	70	—	—	—	7
	(4) Hereditary								
	(5) Period not indicated	...							
35.	Other venereal diseases:—								
	(1) Soft chancre	1	9	10	10	—	—	—	—
	(2) Gonorrhoea and its complications	11	129	140	129	—	—	—	11
	(3) Gonorrhoeal ophthalmia	—	4	4	4	—	—	—	—
	(4) Gonorrhoeal arthritis	5	64	69	62	—	—	—	6
	(5) Granuloma venereum	...							
	(6) Tropical bubo	...							
36.	Purulent infective septicaemia:—								
	(1) Septicaemia	1	5	6	2	—	—	4	—
	(2) Pyaemia	—	1	1	1	—	—	—	—
	(3) Gas gangrene	—	4	4	1	—	—	3	—
37.	Fever unclassified	—	4	4	1	—	—	—	—
38.	Malaria:—								
	(1) Tertian (benign)	1	225	226	219	—	—	—	7
	(2) Quartan	2	42	44	42	—	—	—	—
	(3) Aestivo-autumnal (subtertian)	11	84	852	790	—	—	49	13
	(4) Mixed infections	—	10	10	6	—	—	3	1
	(5) Unclassified	5	168	173	168	—	—	—	5
	(6) Cachexia	5	99	104	91	—	—	7	6
	(7) Blackwater fever	—	5	5	4	—	—	—	1
39.	Other diseases due to <i>Protzoa</i> :—								
	(1) Yaws (framboesia)	20	291	311	230	—	—	—	31
	(2) Spirochaetosis icterohaemorrhagica	—							
	(3) Leishmaniasis [dermal]	—							
	(4) Kala azar	—							
	(5) Other diseases:—	—							
40.	Ankylostomiasis	...	12	348	360	344	—	—	6
41.	Hydatid cysts	...							10
42.	Other diseases due to <i>Helminths</i> :—								
	<i>Cestodes</i>								
	(1) <i>Taenia solium</i>	—							
	(2) <i>Taenia saginata</i>	—							
	(3) Other cestodes	—	1	1	1	—	—	—	—
	<i>Nematodes</i>								
	(4) <i>Filaria</i>	—							
	(5) <i>Ascaris</i>	5	158	163	159	—	—	—	4
	(6) <i>Trichuris trichiura</i>	—							
	(7) <i>Oxyuris vermicularis</i>	—	1	1	1	—	—	—	—
	(8) <i>Dracunculus medinensis</i>	—							—

Diseases.	Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>III. Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases</i>								
56. Rheumatic Fever:—								
(1) with cardiac involvement..								
(2) without cardiac involvement ..								
57. Chronic rheumatism and osteo- arthritis ..	1	4	4	3	—	—	—	1
58. Gout ..	1	4	4	4	—	—	—	—
59. Diabetes (not including diabetes insipidus) ..	1	8	9	6	—	—	2	1
60. Scurvy (including Barlow's diseases) ..								
61.—(1) Beri-beri including epi- mic dropsy ..	2	37	39	27	—	—	—	8
(2) Beri-beri associated with pregnancy or labour ..								4
62. Pellagra ..								
63. Rickets ..								
64. Osteomalacia ..								
65. Diseases of the pituitary gland ..								
66. Diseases of the thyroid and parathyroid glands:—								
(1) Simple goitre ..								
(2) Exophthalmic goitre ..								
(3) Myxoedema, cretinism ..								
(4) Tetany ..								
(5) Other diseases of the thyroid glands ..								
67. Diseases of the thymus ..								
68. Diseases of the adrenal glands (excluding tuberculosis) ..								
69. Other general diseases:—								
(1) Acidosis ..								
(2) Other diseases of metabolism ..								
<i>IV. Diseases of the Blood and Blood Forming Organs</i>								
70. Haemorrhagic conditions:—								
(1) Purpura ..								
(2) Haemophilia ..								
71. Anaemia and chlorosis:—								
(1) Pernicious anaemia ..								
(2) Splenic anaemia ..								
(3) Chlorosis ..								
(4) Secondary anaemia ..								
(5) Others ..								
72. Leukaemia.—								
(1) Leukaemia ..								
(2) Hodgkin's disease ..								
73. Diseases of the spleen:—								
(1) Banti's diseases ..								
(2) Others (not including diseases of the spleen due to malaria or leukaemia) ..								
74. Other diseases of the blood and blood forming organs ..	—	3	3	1	—	—	—	2

Diseases.

	Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>V. Chronic Poisoning</i>								
75. Alcoholism (acute or chronic)								
76. Chronic poisoning by other organic substances:—								
(1) Opium	3		3	3				
(2) Morphia, cocaine								
(3) Others								
77. Chronic poisoning by mineral substances:—								
(1) Lead poisoning	4		4	4				
(2) Arsenical dermatitis								
(3) Others								
<i>VI. Diseases of the Nervous System and Sense Organs</i>								
78. Encephalitis (not including encephalitis lethargica):—								
(1) Cerebral abscess	1		1					
(2) Other forms of encephalitis								
79. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis) ...	1		1	1				
80. Tabes dorsalis (locomotor ataxia)	2		2	1				
81. Other diseases of the spinal cord	1		1					
82. Apoplexy and paralysis:—	4	12	16	13			2	
(1) Cerebral haemorrhage ...								
(2) Cerebral embolism								
(3) Cerebral thrombosis ...								
(4) Haemiplegia, cause not determined								
(5) Other paralysis ...								
83. General paralysis of the insane	1		1	—				1
84. Other forms of insanity:—								
(1) Dementia praecox								
(2) Others								
85. Epilepsy	2		2	2				
86. Infantile convulsions (age under 5 years)	7		7	3				4
87. Other diseases of the nervous system:—								
(1) Chorea								
(2) Neuritis and neuralgia ...	3		3	3				
(3) Paralysis agitans								
(4) Disseminated sclerosis ...								
(5) Neurasthenia	1		1	1				
(6) Hysteria								
(7) Others	7		7	7				
88. Diseases of the eye:—								
(1) Conjunctivitis	37		37	36				
(2) Trachoma								
(3) Corneal ulcer	2	3	5	5				
(4) Other diseases of the eye.	2	21	23	20				3
89. Diseases of the ear and or the mastoid sinus:—								
(1) Otitis externa		1	1	1				
(2) Otitis media								
(3) Mastoiditis								
(4) Others	1	5	6	6				

Diseases.

		Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>VII. Diseases of the Circulatory System</i>									
90.	Pericarditis	—	1	1	—	—	—	—	1
91.	Acute endocarditis:—	—	1	1	1	—	—	—	—
	(1) Malignant	—	—	—	—	—	—	—	—
	(2) Others	—	—	—	—	—	—	—	—
92.	Chronic endocarditis-valvular disease:—	—	2	2	2	—	—	—	—
	(1) Aortic valve disease	—	—	—	—	—	—	—	—
	(2) Mitral valve disease	—	—	—	—	—	—	—	—
	(3) Aortic and mitral	—	—	—	—	—	—	—	—
	(4) Others	—	—	—	—	—	—	—	—
93.	Diseases of the myocardium:—	—	1	1	1	—	—	—	—
	(1) Acute myocarditis	—	1	1	1	—	—	—	—
	(2) Chronic myocardial degeneration	—	1	1	1	—	—	—	—
94.	Diseases of the coronary arteries:—	—	—	—	—	—	—	—	—
	(1) Angina pectoris	—	—	—	—	—	—	—	—
	(2) Coronary thrombosis	—	—	—	—	—	—	—	—
	(3) Coronary sclerosis	—	—	—	—	—	—	—	—
95.	Other diseases of the heart:—	—	—	—	—	—	—	—	—
	(1) Auricular fibrillation	—	—	—	—	—	—	—	—
	(2) Heart block	—	—	—	—	—	—	—	—
	(3) Others	—	—	—	—	—	—	—	—
96.	Aneurysm:—	—	6	6	1	—	—	—	5
	(1) Aneurysm of aorta	—	—	—	—	—	—	—	—
	(2) Aneurysm of other arteries	—	—	—	—	—	—	—	—
97.	Arterio-sclerosis	—	—	—	—	—	—	—	—
98.	Gangrene	—	—	—	—	—	—	—	—
99.	Other diseases of the arteries	—	—	—	—	—	—	—	—
100.	Diseases of the veins:—	—	—	—	—	—	—	—	—
	(1) Varicose veins	—	—	—	—	—	—	—	—
	(2) Haemorrhoids	—	6	6	6	—	—	—	—
	(3) Phlebitis	—	—	—	—	—	—	—	—
	(4) Thrombosis	—	—	—	—	—	—	—	—
	(5) Others	—	—	—	—	—	—	—	—
101.	Diseases of the lymphatic system:—	—	—	—	—	—	—	—	—
	(1) Lymphangitis	—	2	2	2	—	—	—	—
	(2) Lymphadenitis	—	3	3	3	—	—	—	—
	(3) Bubo (non-specified)	—	2	41	43	41	—	—	2
102.	Abnormalities of blood pressure:—	—	—	—	—	—	—	—	—
	(1) High blood pressure	—	—	—	—	—	—	—	—
	(2) Low blood pressure	—	—	—	—	—	—	—	—
103.	Other diseases of the circulatory system:—	—	—	—	—	—	—	—	—
	(1) Epistaxis	—	—	—	—	—	—	—	—
	(2) Others	—	—	—	—	—	—	—	—
<i>VIII. Diseases of the Respiratory System</i>									
104.	Diseases of the nasal fossae and its annexa:—	—	—	—	—	—	—	—	—
	(1) Diseases of the nose	—	—	—	—	—	—	—	—
	(2) Diseases of the accessory nasal sinuses	—	—	—	—	—	—	—	—
		—	5	5	4	—	—	—	1

Diseases.

	Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>VIII. Diseases of the Respiratory System continued</i>								
105. Diseases of the larynx:—								
(1) Laryngismus stridulus ..								
(2) Laryngitis ..								
(3) Other diseases of the larynx ..								
106. Bronchitis:—	2	98	100	96	—	—	1	3
(1) Acute ..								
(2) Chronic ..								
(3) Not defined as acute or chronic ..								
107. Broncho-pneumonia ..	3	5	5	1	—	—		4
108. Lobar-pneumonia ..	118	121	73	—	—	—	44	4
109. Pneumonia (not otherwise defined) ..	—	—	—	—	—	—	—	—
110. Pleurisy ..	—	—	—	—	—	—	—	—
(1) Empyema ..								
(2) Other pleurisy ..								
<i>III. Congestion and haemorrhagic infarction of lung, etc:—</i>								
(1) Hypostatic congestion of lung ..								
(2) Massive collapse ..								
(3) Pulmonary embolism ..								
(4) Others ..								
112. Asthma ..	3	44	47	42	—	—	2	3
113. Pulmonary emphysema ..								
114. Other diseases of the respiratory system:—								
(1) Chronic interstitial pneumonia (including occupational diseases of the lung) ..								
(2) Gangrene of the lung ..								
(3) Abscess of the lung ..								
(4) Bronchiectasis ..								
(5) Others ..								
<i>IX. Diseases of the Digestive System</i>								
115. Diseases of the buccal cavity, pharynx, etc:—								
(1) Pyorrhoea ..								
(2) Dental caries ..								
(3) Stomatitis ..								
(4) Ludwig's angina ..								
(5) Diseases of the tonsils ..								
(6) Others ..								
116. Diseases of the oesophagus ..	—	—	—	—	—	—	—	—
117. Ulcer of the stomach or duodenum:—								
(1) Ulcer of the stomach ...								
(2) Ulcer of the duodenum ..								
118. Other diseases of the stomach:—								
(1) Gastritis ..								
(2) Others ..								
119. Diarrhoea and enteritis (under 2 years) ..	—	—	—	—	—	—	—	—
120. Diarrhoea and enteritis:— (2 years and over)								
(1) Colitis ..								
(2) Otherwise defined ..	2	35	37	35	—	—	1	1

Diseases.		Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>IX. Diseases of the Digestive System - continued</i>									
121. Appendicitis	...	—	5	5	5	—	—	—	—
122. Hernia, Intestinal obstruction:—									
(1) Hernia	...	—	6	6	6	1	—	—	—
(2) Strangulated hernia	...								
(3) Intestinal obstruction (including intussusception)	...	—	1	1	—	—	—	1	—
123. Other diseases of the intestines:—									
(1) Constipation, intestinal stasis	...	—	31	31	31	—	—	—	—
(2) Diverticulitis	...								
(3) Others	...	—	5	5	5	—	—	—	—
124. Cirrhosis of liver (non-syphilitic):—									
(1) Alcoholic	...	1	8	9	8	—	—	1	—
(2) Not returned as alcoholic	...	1	4	5	3	—	—	2	—
125. Other diseases of the liver:—									
(1) Acute yellow atrophy	...	—	2	2	1	—	—	1	—
(2) Toxic hepatitis	...								
(3) Amoebic abscess & hepatitis	...	—							
(4) Others	...	—							
126. Biliary calculi:—									
(1) With cholecystitis	...	—	3	3	2	—	—	1	—
(2) Without mention of cholecystitis	...								
127. Other diseases of the gall bladder and ducts:—									
(1) Cholecystitis without record of calculi	...								
(2) Others	...								
128. Diseases of the pancreas (excluding diabetes mellitus)...		—	1	1	—	—	—	1	—
129. Peritonitis, without stated cause	...	—	2	2	1	—	—	1	—
<i>X. Diseases of the Genito-Urinary System (non-venereal)</i>									
130. Acute nephritis	...								
131. Chronic nephritis	...	—	17	17	6	—	—	10	—
132. Nephritis (undefined as acute or chronic)	...	—	1	17	18	16	—	—	—
133. Other diseases of the kidney and annexa:—									
(1) Pyelitis	...								
(2) Others	...								
134. Calculi of the urinary passages:—									
(1) Calculi of the kidney and ureter	...								
(2) Calculi of the bladder	...								
(3) Calculi of unstated site	...								
135. Diseases of the bladder:—									
(1) Cystitis	...	—	1	1	2	2	—	—	—
(2) Others	...								
136. Diseases of the urethra:—									
(1) Stricture	...	—	7	7	6	—	—	—	—
(2) Others	...								
137. Diseases of the prostate	...	—	5	5	4	—	—	1	—

Diseases.

	Remained	Admitted	Total	Discharged	Transferred	Absconded	Died	Remaining
<i>XV. Diseases of early Infancy</i>								
158. Congenital debility ..	1							
159. Premature birth ..		4	4	1	1			
160. Injury at birth ..								
161. Other diseases peculiar to early infancy:—								
(1) Atelectasis ..								
(2) Icterus neonatorum ..								
(3) Affections of the umbilicus ..								
(4) Pemphigus neonatorum ..								
(5) Others ..								
<i>XVI. Conditions Associated with Old Age</i>								
162. (1) Senile dementia ..								
(2) Other forms of senile decay ..								
<i>XVII. Affections Produced by External Causes</i>								
163. Suicide, or attempted suicide, by poisoning (including corrosive poisoning) ..	1	1	1	1	1	1	1	1
164. Suicide, or attempted suicide, by gas poisoning ..								
165. Suicide, or attempted suicide, by hanging or strangulation.								
166. Suicide, or attempted suicide, by drowning ..								
167. Suicide, or attempted suicide, by firearms ..								
168. Suicide, or attempted suicide, by cutting or piercing instruments ..								
169. Suicide, or attempted suicide by crushing ..								
170. Suicide, or attempted suicide, by jumping from a height ..								
171. Suicide, or attempted suicide, by other means ..								
172. Infanticide ..								
173. Assault or homicide, by firearms ..								
174. Assault or homicide, by cutting or piercing instruments ..	16	431	447	428	—	—	5	14
175. Assault or homicide, by other means ..								
176. Attacks by venomous animals:—								
(1) Snake bite ..								
(2) Insect bite ..								
(3) Others ..								
177. Food poisoning ..	1	1						
178. Accidental absorption of irrepirable or poisonous gas ..								
179. Other acute accidental poisoning ..								
180. Injuries due to conflagration ..								
181. Accidental burns:—								
(conflagration excepted)								
(1) Burns by fire ..								
(2) Scalds ..								
(3) Burns by corrosive substances ..	7	7	5	—	—	—	1	1

41
APPENDIX V.

Births and Deaths registered for the past five years.

	Kota Bharu Dist:		Pasir Puteh Dist:		Ulu Kel: Dist:		Total	
	Births	Deaths	Births	Deaths	Births	Deaths	Births	Deaths
1932	7,898	4,272	2,856	1,450	1,471	900	12,225	6,622
1933	6,729	3,887	2,774	1,532	1,470	1,020	10,973	6,439
1934	7,211	4,546	2,321	1,659	1,563	1,104	11,095	7,309
1935	7,510	4,821	2,307	1,476	1,162	1,225	10,979	7,522
1936	7,355	5,246	2,574	1,892	1,723	1,318	11,652	8,456

APPENDIX VI.

Births and Deaths registered in 1936 according to Nationalities.

	Population	Births	Birth rate per mille	Deaths	Death rate per mille
Malays	355,495	10,718	30.14	7,829	22.02
Chinese	20,801	620	29.80	383	18.41
Indians	11,753	148	12.67	118	10.04
Europeans	78	1	12.82	2	25.64
Eurasians	44	1	22.73	—	—
Others	7,646	164	21.45	124	16.21
Total	395,817	11,652	29.44	8,456	21.36

APPENDIX VII.

Infantile Mortality.

Total Births.	Death under one year of Age.	Mortality per 1,000 Births.
11,652	1,520	130.07

APPENDIX VIII.

STATE OF KELANTAN.

Deaths grouped according to Age, Sex & Nationality.

Death by Age.	Sex.	Europeans.	Eurasians.	Malays.	Chinese,	Indians,	Others,	Total,
0—	M	—	—	370	16	3	1	390
	F	—	—	210	17	7	1	235
4 Weeks	M	—	—	168	9	2	2	181
	F	—	—	216	3	—	1	220
3 Months	M	—	—	152	10	4	2	168
	F	—	—	105	4	3	—	112
6 Months	M	—	—	162	8	3	—	173
	F	—	—	147	4	4	—	155
1 Year	M	—	—	408	16	1	2	427
	F	—	—	318	5	2	4	329
5 Years	M	—	—	320	6	—	6	332
	F	—	—	305	11	3	5	324
10 Years	M	—	—	242	5	—	2	249
	F	—	—	226	9	2	3	240
15 Years	M	—	—	120	4	2	2	128
	F	—	—	131	1	1	2	135
20 Years	M	—	—	104	4	3	1	112
	F	—	—	161	3	1	4	169
25 Years	M	—	—	155	16	3	3	177
	F	—	—	163	5	5	1	174
30 Years	M	—	—	196	17	6	4	223
	F	—	—	198	5	4	7	214
35 Years	M	—	—	134	21	21	3	179
	F	—	—	132	—	5	1	138
40 Years	M	—	—	179	24	10	5	218
	F	—	—	177	8	1	3	189
45 Years	M	1	—	93	35	6	5	140
	F	—	—	69	2	3	3	77
50 Years	M	—	—	205	23	2	6	236
	F	—	—	196	5	—	4	205
55 Years and over	M	1	—	977	59	5	18	1060
	F	—	—	1095	26	4	22	1147
Total Deaths,	M.F.	2	—	7834	381	116	123	8456
Births.	M	1	—	5532	325	76	71	6005
	F	1	1	5186	295	72	92	5647
Total Births,	M.F.	2	1	10718	620	148	163	11652

APPENDIX IX.

Deaths from Principal Causes.

Diseases		Male	Female	Total
Malaria	..	63	15	78
Fever Unspecified (Probably malaria)	..	36	34	70
Fever Unspecified	..	2,246	2,165	4,411
Enteric Fever	..	3	—	3
Dysentery	..	5	2	7
Influenza	..	1	—	1
Tuberculosis of Respiratory System (including Cases reported as "Batok Kering")	..	60	27	87
Other forms of Tuberculosis	..	—	—	—
Leprosy	..	2	—	2
Syphilis	..	—	—	—
Ankylostomiasis	..	23	20	43
Cancer	..	1	—	1
Beri-Beri	..	1	—	1
Diseases of the heart	..	2	—	2
Other Diseases of the Circulatory System	..	—	—	—
Bronchitis (including Cases reported as "Batok Sahaja")	..	100	55	155
Pneumonia (All forms)	..	43	6	49
Other Diseases of Respiratory System	..	8	1	9
Diarrhoea and Enteritis (Including "Cheroh")	..	201	133	334
Other Diseases of Digestive System (Including Cases reported as "Sakit Perot")	..	103	87	190
Convulsions (Including "Sawan")	..	449	337	786
† Diseases of Nervous System & Sense Organs		8	5	13
Non-Venereal Diseases of Genito-Urinary System	..	—	—	—
Diseases of Pregnancy, Child Birth and Puerperal State	..	—	93	93
† Premature Birth & Diseases of Early Infancy	..	42	47	89
Old Age & Senility	..	733	866	1,599
Violence (All forms)	..	30	10	40
Other Causes	..	278	116	394
Total	..	4,438	4,018	8,456

† Excluding Infantile convulsions. Ratio per mille of Population 21.36

APPENDIX X.

Population by race for the last five years, estimated by geometric progression method, except Europeans and Eurasians done by actual Census.

Mid-Years.	Malays	Europeans				Others	Total
		Europeans	Eurasians	Chinese	Indians		
1932	335,577	124	32	18,203	8,929	7,305	370,170
1933	340,451	114	32	18,816	9,562	7,389	376,364
1934	345,396	84	24	19,453	10,245	7,475	382,676
1935	350,411	84	44	20,115	10,973	7,560	389,187
1936	355,495	78	44	20,801	11,753	7,646	395,817

Under Malays are included all persons of the Malayan race classed in 1931 Census as Malasians.

The total number of births registered in 1936 was 11,652 (6,005 males and 5,647 females). In every 1,000 births registered 515.4 were males and 484.6 females. The highest birth rate according to nationalities was 30.14 per mille amongst Malays. The lowest (amongst Indians) was 12.67 per mille.

The total number of deaths registered was 8,456 (4,393 males and 4,063 females).

Birth rate = 29.44 per mille compared with 28.21 in 1935.

Death rate = 21.36 per mille compared with 18.21 per mille in 1935.

Infantile Mortality = 130.07 per 1,000 births compared with 132.43 in 1935.

APPENDIX XI.

ESTATE HEALTH STATISTICS.

Total Estate Population all Nationalities

Indian Population

Deaths include all who died in Government Hospitals within 30 days of admission

Estate employing entirely Malay or Chinese labour are not shown, as no reliable statistics are available.

APPENDIX XII.

Annual Report by the Veterinary Inspector
for the year, 1936.

1. *Total Animal Diseases.*

Total number of animals treated is as follows:—

Cattle	..	..	..	9
Buffalo	..	..	..	1
Goat	..	..	..	1
Dogs	..	..	..	17
Cats	..	..	..	10
Horses	..	..	..	2
Mare	..	..	..	1
Deer	..	..	..	1
Fowls	..	..	..	8
Bird	..	..	..	1

In addition to the above, villages were visited and advice given when necessary.

2. *Special Diseases.*

There was no case of rabies during the year.

Eight hundred and six dogs were shot.

There was no outbreak of any contagious or infectious disease during the year.

The following Notifications were passed prohibiting import of animals from infected areas:—

- (i) Circular No: 23 of 1936 dated 18th May, 1936 prohibiting import of cattle, buffaloes, sheep, goats and swine from any part of the State of Johore due to outbreak of Rinderpest. This was rescinded on 26th July, 1936 as the disease ceased to exist.
- (ii) Circular No: 35 of 1936 dated 29th July, 1936 prohibiting the importation of cattle from Siam due to the outbreak of Rinderpest and Barbone.

3. *Import & Export of Animals.**Import.*

- (a) Eleven dogs were imported from F. M. S., S. S. and Johore.
- (b) Twenty goats were imported from Singapore.

Illegal Import.

Four buffaloes and one ox were imported into the State from Siam in contravention of existing regulations. They were detected and destroyed, while the offenders were legally dealt with.

Export.

(a) Twenty ewes were exported to British North Borneo for breeding purposes.

(b) Eight hundred and eighty nine head of cattle were exported via Gua Musang.

(c) Five hundred and seventy five head of buffaloes were exported via Gua Musang.

(d) Ten white buffalo calves were exported via Gua Musang to Medical Research Institute, Kuala Lumpur for research purposes.

(e) Forty goats (of which 2 were she-goats) were exported via Gua Musang.

(f) One mare was exported to Trengganu.

All were examined and certificates of health given.

Castration.

Thirty one head of bulls were castrated by the Burdizzo method.

It is hoped to make this operation popular, as it is thought that castration of the poorer type of animals will improve their breed.

5. Inspection of Milch-cattle Sheds, Slaughter Houses and Markets.

All these places were visited frequently and advice given when necessary.

Return of animals slaughtered during the year as supplied by the District Offices concerned, is as follows:—

<i>District.</i>	<i>Cattle.</i>	<i>Buffaloes.</i>	<i>Sheep.</i>	<i>Goats.</i>	<i>Swine.</i>
Kota Bharu	5,029	761	322	308	2,205
Pasir Mas	2,556	625	—	—	231
Ulu Kelantan	1,174	215	32	114	1,378
Pasir Puteh	1,158	45	—	—	—
Bachok	433	133	162	247	3
Total	10,350	1,779	516	669	3,817

D. R. MEHTA

VETERINARY INSPECTOR,
KELANTAN.

APPENDIX XIII.

CLIMATOLOGICAL SUMMARY KOTA BHARU KELANTAN

TEMPERATURE.

RAINFALL

